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Bacteria enlisted for Passaic River cleanup

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Federal officials have approved a pilot project to determine whether bacteria can eliminate cancer-causing dioxin and other pollutants in the Passaic River.

Scientists plan to take samples from the river this spring and test their method in a laboratory. If the results are promising, the U.S. Environmental Protection Agency may allow them to conduct tests in the river itself.

Federal officials said the testing will not affect their plans for a \$1.7 billion cleanup involving dredging part of the river. "In my mind this is a separate and distinct endeavor," said Ray Basso, the EPA project manager for the Passaic River. "We think this has promise, but we don't see it as a magic bullet."

The scientists work for two of the companies responsible for paying for the dredging, which would be one of the most expensive cleanups in U.S. history.

More than a century of industrialization along the Passaic has left dioxin, PCBs, mercury and other pollutants throughout 17 miles of the river, from Newark Bay to the Dundee Dam in Garfield.

The EPA unveiled a plan in April for "bank-to-bank" dredging of the river's lower eight miles, which contain the greatest concentration of industrial pollution. About 4.3 million cubic yards of sediment — enough to fill MetLife Stadium twice — would be scooped out. A cap would be placed over the remaining pollution.

The agency is not expected to finalize the plan until the end of the year.

Many of the 100 companies that polluted the river or inherited the liability of past polluters have been trying to persuade the EPA to choose a cheaper plan.

The bacteria test is being funded by Maxus Energy Corp. of Texas and Tierra Solutions Inc. of East Brunswick. The two companies inherited the liability of the former Diamond Alkali plant in Newark, where workers dumped dioxin into the river while making Agent Orange, the cancer-causing defoliant, during the Vietnam War.

Trying a technique called bioremediation, scientists will introduce carbon into the contaminated sediment as a food source, to increase the number of microbes. The microbes in turn could eat the pollutants, digest them and excrete harmless material.

Similar techniques have been conducted at 100 Superfund sites across the nation and at other toxic sites in North Jersey, with varying degrees of success. In 2011, a plan to pump soybean oil into groundwater contaminated by the former DuPont plant in Pompton Lakes was abandoned after officials determined that the oil would not travel quickly enough through the soil to clean up water contaminated with solvents that had migrated under 450 homes.

But the EPA sees bioremediation as a promising method because it eliminates the transportation and disposal of toxic material, which often end up in landfills licensed to handle such pollution.

While bioremediation has been used to successfully treat contaminated groundwater elsewhere, the Passaic project may mark the first time the technique has been used in a riverbed. The Passaic is tidal, and its temperature fluctuates greatly throughout the year. What might work in a

lab might not work in the river, since bioremediation requires the right temperature and nutrients to be successful, Basso said.

Still, the benefits could be significant if the method were to work in the Passaic, said John Pardue, an environmental engineer from Louisiana State University leading the project.

"The beauty of it is we're not putting clean material over contaminated material," he said. "We're going to destroy these polluted molecules forever. It's permanent destruction."

Advocates for dredging the Passaic have been leery of alternative cleanup methods, saying they're usually just a way for a polluter to delay a more expensive cleanup.

Debbie Mans, who is co-chairwoman of a community group advising the EPA on the cleanup, said: "It seems like a long shot, but we're open to hearing about it and understanding it more. We told [Maxus and Tierra] that this cannot slow down any cleanup remedy we have ongoing."

Basso said that other toxic cleanups could benefit from Pardue's work.

"Maybe the timing won't work with the Passaic but it would work with projects down the road," Basso said.

Even Pardue said that his work may prove more beneficial to future cleanups.

"It's about pushing the science forward," he said. "It's not that this would be a remedy. Can we learn practical lessons from this?"

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